



## **Impact of seasonal and postglacial surface displacement on global reference frames**

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The calculation of actual station positions requires several corrections which are partly recommended by the International Earth Rotation and Reference Systems Service (IERS) Conventions (e.g., solid Earth tides and ocean tidal loading) as well as other corrections, e.g. accounting for hydrology and atmospheric loading. To investigate the pattern of omitted non-linear seasonal motion we estimated empirical harmonic models for selected stations within a global solution of suitable Very Long Baseline Interferometry (VLBI) sessions as well as mean annual models by stacking yearly time series of station positions. To validate these models we compare them to displacement series obtained from the Gravity Recovery and Climate Experiment (GRACE) data and to hydrology corrections determined from global models. Furthermore, we assess the impact of the seasonal station motions on the celestial reference frame as well as on Earth orientation parameters derived from real and also artificial VLBI observations.

In the second part of the presentation we apply vertical rates of the ICE-5G\_VM2\_2012 vertical land movement grid on vertical station velocities. We assess the impact of postglacial uplift on the variability in the scale given different sampling of the postglacial signal in time and hence on the uncertainty in the scale rate of the estimated terrestrial reference frame.